

## **Otolith Chemistry Reflects Life-History and Environment of Quillback Rockfish**

*Terrie Klinger\*, University of Washington*

*Lance Morgan, Marine Conservation Biology Institute*

*Mike Sanborn, University of Victoria*

*Kevin Telmer, University of Victoria*

Keywords: rockfish, *Sebastes*, otolith, dispersal

Spatially resolved trace element analysis of sagittal otoliths has been successfully used to infer aspects of individual life history and population structure and to characterize larval dispersal trajectories in several marine fish species. We analyzed otoliths of 85 quillback rockfish (*Sebastes maliger*) by laser ablation ICP-MS and dissolution ICP-MS to test whether trace elements could be used to distinguish between specimens collected from locations in Puget Sound, the western Strait of Juan de Fuca, and Johnstone Strait, and to test whether chemical analyses could be used to infer larval dispersal in this species. We found substantial variation in chemical signatures within and among samples. Several elements, including Mn and Zn, varied with age or growth of the individual, suggesting metabolic controls on their incorporation into otoliths. Sr and Ba did not appear to co-vary with age or growth, and are more likely to be indicative of ambient water chemistry. The relative concentrations of both elements were highly variable, indicating that individuals experience highly variable chemical environments. This could be due either to individual movements or to shifting ambient chemistry. Comparing time-series of otolith chemistry with time-series of chemical shifts or climate forcings may help to resolve these questions.